New features of CadnaA 2022

New features of CadnaA 2021 MR1 and MR2 can be found [here.](#)

Configuration of Calculation

- Rename Tab „Country" in Tab „Standards". In Tab Standards:
  - Removal of the country selection. The calculation methods for the noise types industry, road and railroad are now always selected individually (analog to previous country selection „user defined")
  - „Parameter Check" becomes „Template", see separate section later in this document.
- New calculation methods according to CNOSSOS-EU, see separate section later in this document.
- Calculation method CNOSSOS-EU: Setting „Calcluation acc. to" to define the EU-version or a specific national implementation can now be set separately for each noise type in the tabs industry, road and railroad (previously: one setting for all bevorementioned noise types).
- Railroad Tab (CNOSSOS-EU): New input parameter number of „Train-Barrier-Interactions", default value is 0.
- Tab Road (CNOSSOS-EU): Button „Vehicle classes" extended to selection menu. This now shows default vehicle classes defined in the internal default library and user-defined entries of the local library.
- Tab Evaluation Parameters: When using the Evaluation Parameter „DIN4109tot" or „f(x)=DIN4109totd/n" the noise type industry is now always considered with target value Lde, independent of the setting of other Evaluation Parameter (previously: Ld).
- Tab Evaluation Parameters: When using the Evaluation Parameter „DIN4109tot" or „f(x)=DIN4109totd/n" the case distinction regular case/special case for the noise type Industry is now also carried out for the calculation in the grid (previously only for Receivers and Building Evaluations).
- Tab Ground Absorption: Default value for resolution at map of ground absorption = 1m (previously 2m)

Building Noise Map

- Setting „Lower Rcvr max 20cm below eave" additionally considers that no receivers with a relative height < 2.0 m above ground are generated (according to BUB 2021).

Calculation | Configuration | Calculation Methods (CNOSSOS-EU)

The following calculation methods have been introduced into CadnaA to implement the European Directives 2015/996 and 2021/1226 and their national implementations. After selecting "CNOSSOS-EU" in the "Standards" Tab, the European or national implementations can be selected for each noise type Tab:

- Industry:

„Calcluation acc. to"	previously	Comment
2015/996 EU	CNOSSOS-EU	Implementation of additional specifications from ISO TR 17534-4, Version 2020[1]
2021/1226 EU	-	Implementation of the EU Directive 2021/1226

- Road

„Calcluation acc. to"	previously	Comment
2015/996 EU	CNOSSOS-EU	Implementation of additional specifications from ISO TR 17534-4, Version 2020[1]
2015/996 DE (BUB 2018)	CNOSSOS-DE	
2015/996 AT (RVS 2019)	CNOSSOS-AT	
2021/1226 EU	-	Implementation of the EU Directive 2021/1226
2021/1226 DE (BUB 2021)	-	Implementation of the national interpretations of EU Directive 2021/1226 for Germany and Austria.
2021/1226 AT (RVS 2021)	-	

- Railroad

„Calcluation acc. to"	previously	Comment
2015/996 EU	CNOSSOS-EU	Implementation of additional specifications from ISO TR 17534-4, Version 2020[1]
2015/996 DE (BUB 2018)	CNOSSOS-DE	
2015/996 AT (RVE 2019)	CNOSSOS-AT	
2015/996 FR (SNCF 2021)	-	Implementation of the national interpretations of EU Directive 2015/996 for France.
2021/1226 EU	-	Implementation of EU Directive 2021/1226
2021/1226 DE (BUB 2021)	-	Implementation of the national interpretations of EU Directive 2021/1226 for Germany, Austria, Belgium and France.
2021/1226 AT(RVE 2022)	-	
2021/1226 BE (Infrab. 2022)	-	
2021/1226 FR (SNCF 2022)	-	

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[1] Existing projects saved with CadnaA 2021 MR2 (or earlier) are displayed with the addition "w/o 17534" in the calculation configuration when opened with CadnaA 2022. For new CadnaA files this selection option is no longer available.

New Feature „Templates"

- CadnaA-internally defined Templates for calculation according to a specific standard, regulation, guideline or method, which takes into account settings of the Configuration of Calculation, Building Noise Map, individual Objects and Areas of Designated Use. A template can be selected at the following places in CadnaA:
  - Configuration of Calculation, Tab „Standards": When a Template is selected, the current settings are compared with the Template and deviations are displayed. With a click on OK all settings of the Template are taken over into the project.
  - For new projects in the File menu → New (Template). A new CadnaA model can thus be initialized with a basic setting. The selected template is saved in the calculation configuration, "Standards" Tab.
- In the menu „New (Template)" additionall user defined CadnaA files can be used as templates by placing them in the installation directory in the subdirectory templates/new.
  This path can be customized via an entry in the INI-file (section [Main], Variable NewTemplateDir= „C:\example").

CadnaA-Objects

- Railroad (CNOSSOS-EU): representation of emission now in 1/3-Oktave Band Spectrum (previously in octaves)
- Bitmap: The feature „Choose region in browser" upon import from Google Maps os mow based on the Microsoft Edge browser which is usually available by default on Windows systems.

ObjectScan

- New default entry „2021/1226, People in level classes (Median)" for evaluation according to EU Directive 2021/1226 or a national interpretation.
- New default entry „2021/1226, Noisiest grid point in/near building" and „2021/1226, Quietest grid point near building" for determining the loudest/quietest immission level in the grid following the procedure of the test tasks for BEB 2021. Detailed instructions can be found in the CadnaA Reference Manual.
- New default entry „2020/367": Calculation according to EU Directive 2020/367 on the assessment of harmful effects of environmental noise. Calculation of risk ischaemic heart disease (IHD), highly annoyed people (HA) or highly sleep disturbed people (HSD). The calculation procedure is performed in conjunction with the function in the Calculation | Multiple Source Effect menu. For more information, please refer to our reference manual.
- Default entries reorganized with hierarchical menu. User-defined entries can also be stored hierarchically by specifying "\" in the name.
- New Option „Grid Point as Rectangle": When checking whether a grid point lies within an area/inside a window, the associated rectangle is used instead of the x/y position of the point. If rectangle and area/window intersect, the grid point is taken into account.

- New Attributes for „Formula for Summation" LPx_MIN8 and LPx_MAX8. With the help of these attributes the minimum/maximum value of the 8 neighboring grid points (horiz., vert., diag.) can be determined. This function is used in connection with the preset „2021/1226, Quietest grid point near building ".

Libraries

- New library „Vehicle Classes" for the definition of different emission parameters according to CNOSSOS-EU or a country-specific implementation.
- Library „Road Surfaces" for CNOSSOS-EU extended by the input of speed ranges. In addition, it can be defined whether a road surface is valid for 2015/996 and/or 2021/1226.
- Library-Manager: New option „Keep both". When importing to the local / global library, if the ID between existing library entry/library entry to be imported is the same, both are kept.

Attributes, Variables und Keywords

- For calculation method CNOSSOS-EU, new keywords for setting „Calcluation acc. to" for each noise type tab.
    - Tab Industry = CNS_ICNTRIN,
    - Tab Road = CNS_ICNTRRD,
    - Tab Railroad = CNS_ICNTRRL,
    - Tab Aircraft = FLG_ICNTRY.
- The previous keyword ICNTRY is still valid for the setting in the Industry Tab.
- For calculation method CNOSSOS-EU, new keyword CNS_VEHCLS for the selected vehicle class in the Tab „Road".
- For calculation method CNOSSOS-EU, new keywords CNS_VMAX_XX with XX indicating the vehicle class (1, 2, 3, 4A, 4B) for referencing the vehicle class-dependent maximum speed in the "Road" Tab.
- Keywords #(ImmValName, param1, param2) and #(ImmValUnit, param1, param2) extended. The name of a plot cell (in the plot designer) can now be specified as param2. Then evaluation parameter/unit of the plan cell is displayed.
- Object Railroad: New Attributes:
    - RAILROUGHI: Rail roughness as Integer
    - RAILROUGH: Rail roughness as String
    - DBR_STR: Select Bridge as String
    - RAI: Select curve radius as Integer
    - SQUEAL_MEAS: Measure against curve squeal (1/0)

Further Innovations

- Menu Options |Appearance: Double click on object type in list activates / deactivates the display of this object type
- Menu Tables |Variant: Double click on list object activates / deactivates this variant
- New Lua-function cna.activate_protocol() to activate/deactivate the protocol and cna.get/set_weighting() read/write the weighting under Options → Miscellaneous

Bug Fixes

- Optimization of the function „map of ground absorption" in the menu Calculation| Configuration | Tab Ground Absorption. In certain cases, the ground absorption areas could be incorrectly taken into account.
- An error has been corrected when importing directivities in XHN format, where the values were incorrectly interpreted as level correction instead of attenuation. It is recommended to re-import affected directives.
- Fixed incorrect import of barriers from *.prj-Dateien (Mithra).

New Features of CadnaA Version 2021 MR1 + MR2

CadnaA-Objects

- Label: Arithmetic operations within the text field, e.g. #(ObjAtt, 02000000, LP1++LP2, 1, 0.500) can be used to calculate the sum level of day and night.
- Road: Road surfaces implemented according to RAL - "Richtlinien für die Anlage von Landstraßen".
- New object: CadnaB-Building for extended transmission calculations from outside to inside and vice versa with our new software CadnaB.

Calculation | Configuration

- Configuration of calculation → Tab Industry now with the following new options:
  - Obstacles within Area Sources do not reflect
  - No attenuation for sources within built-up areas
- Configuration of calculation → Tab Industry: All settings concerning meteorology have been moved to a separate tab "Meteorology".
- National interpretation of CNOSSOS-EU implemented for France and Spain.
- FTA 18: Missing train classes added.
- Options for CadnaB Interop: Settings regarding synchronization with CadnaB (variant, evaluation parameter, time of synchronization).

Further New Features

- Extended Undo and Redo functionality
  (e.g. editing geometry, actions via „Modify Objects" and object tables)
- Local/global library: Display of sound level spectra in octaves (instead of 1/3 octaves) possible with provided template files. Files are automatically installed in the installation directory.
- Menu Options → Appearance: New buttons to copy/paste a layer including all defined settings.

Miscellaneous

- New attributes to define the directivity of industrial sources: DIR_PHI, DIR_PSI and DIR_THETA
- Consistency Check:
  - Warning if a referenced directivity has been deleted in the directivity library.
  - Warning if "Li from interior sources" refers to a sound level spectrum that has been deleted.
- Display of 1/3 octaves instead of octaves for library tables Sound Levels, Sound Reduction Indices and Absorptions.
- New attribute for building evaluations LP1_STW (floor with maximum level)

Bug Fixes

- RLS-19: When using the guideline RLS-19, the reflection condition of RLS-90 was used up to now. This error has been corrected with version 2021 MR2, so that the reflection condition of RLS-19 is now used. A detailed explanation can be found in the German version of CadnaA at Help -> Contents -> CadnaA 2021 MR2 New Features -> Link in CadnaA.
- When converting a traffic source to an industrial source or when using "Long Straight Road" conversion of sound power level corrected.
- TNM: Screening for cylinder and self-screening corrected.
- Land use: Incorrect assignment of land use when using "empty lines" (land uses without short and long name) fixed. For a detailed description, see Help -> Contents -> CadnaA 2021 MR1 New Features -> Link in CadnaA.